Bench Mark: B.M. 4944-1 Disk in Top of Southwest wingwall of SN. 023-0018. Sta. 52+22.08, 18.81' Lt. Elevation = 646.72

Existing Structure: S.N. 023-0018 was originally built in 1928 as S.B.I. 49, Section 117B at Station 52+86.00. The structure was rehabilitated and lengthened in 1981 with F.A.P. 836, Section 177BR at Station 52+75.86. The superstructure, the Pier and the South Abutment were replaced and the North Abutment was widened. The three simple span superstructure consists of P.P.C. deck beams with H.M.A. wearing surface. The substructures consists of solid stem piers on concrete piles and a new open pile bent south abutment and widened closed concrete north abutment. The structure length measures 115'-10" bk-to-bk of abutments and 36'-0" out-to-out of deck with a 11°30' left-forward skew. Existing deck beams shall be removed and replaced with precast prestressed concrete deck beams, a HMA wearing surface, and type SM steel railing. Existing piers and north abutment shall be repaired.

Traffic to be maintained under stage construction.

No salvage.

SCOPE OF WORK

Repair spalls and delaminations on piers and abutments using formed concrete repair.

Repair existing east wingwall at north abutment.

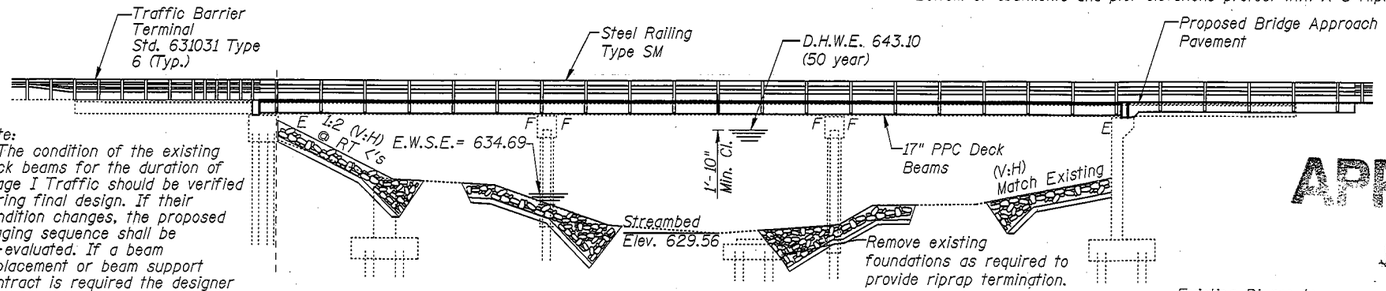
Remove existing concrete deck beams, HMA overlay, approach pavement north end and abutment backwalls.

Install new deckbeams, backwalls, approach slab at north abutment, joints, abutment seat retainers, steel railing and HMA overlay.

DESIGN SCOUR ELEVATION TABLE

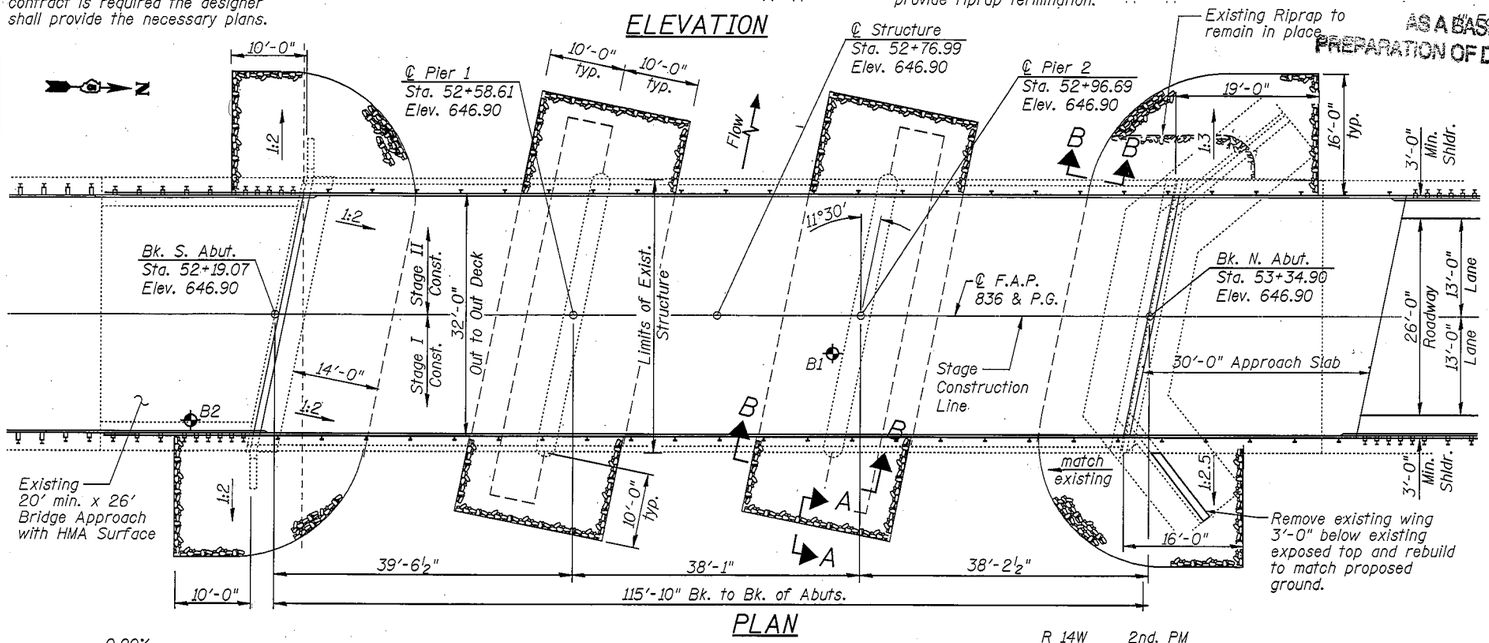
Design Scour Elevation (ft.)	N. Abut.*	Pier 1*	Pier 2*	S. Abut.*
	626.6	630.3	626.9	641.3

*Bottom of abutments and pier elevations protect with A-5 Riprap

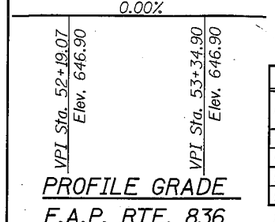


Note:
The condition of the existing deck beams for the duration of Stage I Traffic should be verified during final design. If their condition changes, the proposed staging sequence shall be re-evaluated. If a beam replacement or beam support contract is required the designer shall provide the necessary plans.

ELEVATION



PLAN



PROFILE GRADE

F.A.P. RTE. 836

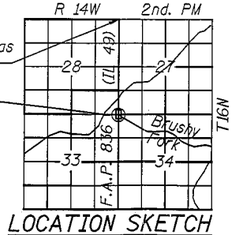
Along ℄ Roadway

WATERWAY INFORMATION

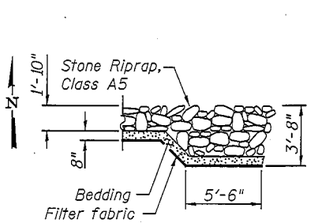
Drainage Area = 54.41 SQ. MI. Low Grade Elev. 645.11 @ Sta. 62+93

Flood	Freq. Yr.	Q C.F.S.	Opening Sq. Ft. Exist.	Opening Sq. Ft. Prop.	Nat. H.W.E.	Head - Ft. Exist.	Head - Ft. Prop.	Headwater El. Exist.	Headwater El. Prop.
	10	2410	852	852	642.1	0.4	0.4	642.5	642.5
Design	50	3710	957	957	643.1	0.6	0.6	643.7	643.7
Base	100	4280	989	989	643.4	0.8	0.8	644.2	644.2
Max. Calc.	500	5620	1062	1062	644.1	1.0	1.0	645.1	645.1

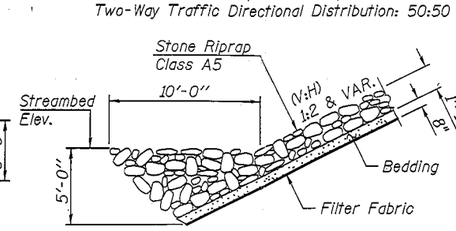
10 year velocity through Existing Bridge = 3.16 ft/s
10 year velocity throught Proposed Bridge = 3.16 ft/s



LOCATION SKETCH



SECTION A-A



SECTION B-B

℄ F.A.P. 836 (IL 49)

32'-0" Out to Out of Deck

3'-0" Shldr. | 13'-0" Lane | 13'-0" Lane | 3'-0" Shldr.

13'-3" Stage I Traffic | 4'-0" | 2'-6" | 13'-6" Stage II Traffic

Steel Railing, Type SM | P.G.L. | Temporary Conc. Barrier (Typ.)

3/16"/Ft. | *** | 3/16"/Ft. | 2'-8"

17"x48" P.P.C. Deck Beams | 2'-0"

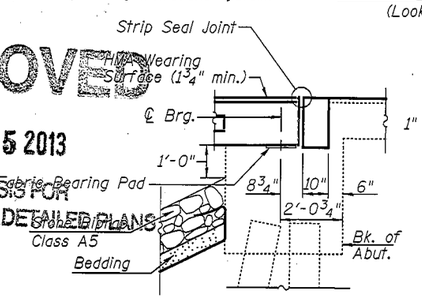
16'-0" Stage II Construction | 16'-0" Stage I Construction

16'-0" Stage II Removal | 20'-0" Stage I Removal

*** 1¾" HMA wearing surface with ¼" waterproofing membrane system.

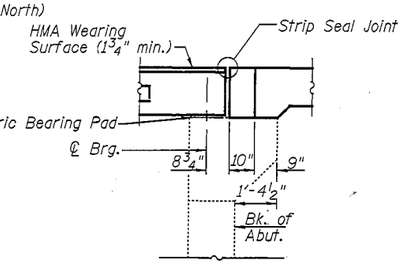
CROSS SECTION

(Looking North)



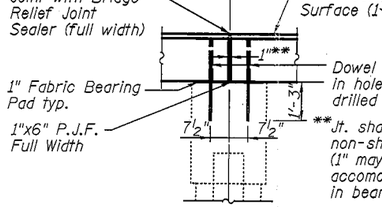
SECTION AT SOUTH ABUTMENT

(Dim. at Rt. ℄'s)



SECTION AT NORTH ABUTMENT

(Dim. at Rt. ℄'s)



SECTION AT PIERS

HIGHWAY CLASSIFICATION

F.A.P. 836 - IL49
Functional Class: Minor Arterial
ADT: 800 (2012); 900 (2032)
ADTT: 22.1%, DHV: 80
Design Speed: 60 m.p.h.
Posted Speed: 55 m.p.h.
Two-Way Traffic Directional Distribution: 50:50

LOADING HL-93

(NEW CONSTRUCTION)

Loading HS20-44 (Existing Const.)
No Future Wearing Surface allowed

DESIGN SPECIFICATIONS

(NEW CONSTRUCTION)

2012 AASHTO LRFD Bridge Design Specifications 6th Edition
1995 Seismic Retrofit Manual

DESIGN STRESSES

FIELD UNITS (NEW CONSTRUCTION)

f'c = 5,000 psi (CWS Only) fc = 3,500 psi
fy = 60,000 psi (Reinforcement)

PRECAST PRESTRESSED UNITS

f'c = 6,000 psi
f'ci - 5,000 psi
fpu = 270,000 psi (1/2"ϕ Low Lax Strands)
fpbt = 201.960 psi (1/2"ϕ Low Lax Strands)

FIELD UNITS (EXIST. CONSTRUCTION)

f'c = 3,500 psi
fy = 60,000 psi (Reinforcement)

SEISMIC DATA

Seismic Performance Category (SPC)=A
Bedrock acceleration coefficient (A) = 0.049
Site Coefficient (S) = 1.2

GENERAL PLAN

IL 49 OVER BRUSHY FORK CREEK

F.A.P. 836 - SEC. 117BR-1

EDGAR COUNTY

STATION 52+76.99

STRUCTURE NO. 023-0018

APPROVED
JUL 15 2013
AS A BASIS FOR PREPARATION OF DETAILED PLANS

Coombe-Bloxdorf P.C.
-CIVIL ENGINEERS-
-STRUCTURAL ENGINEERS-
-LAND SURVEYORS-
Design Firm License No. 184-002703

USER NAME = _MML_	DESIGNED - MCB	REVISED -
	CHECKED -	REVISED -
PLOT SCALE = 0.1667 ' / IN.	DRAWN - MML	REVISED -
PLOT DATE = 7/2/2013	CHECKED - MCB	REVISED -

STATE OF ILLINOIS
DEPARTMENT OF TRANSPORTATION

GENERAL PLAN
SN 023-0018
SHEET NO. 1 OF 1 SHEETS

F.A.P. RTE.	SECTION	COUNTY	TOTAL SHEETS	SHEET NO.
836	117BR-1	EDGAR		
		CONTRACT NO. 70607		
		ILLINOIS FED. AID PROJECT		

FILE NAME = ...\D706607-sht-SN023-0018-TSL.dgn
CB PROJECT NO. 070672-B